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ABSTRACT

This informal, brief bibliography attempts to stress the positive side of aviation, annotating documents that explain how the airlines, aircraft engine manufacturers, government agencies, military aviation, and general aviation are meeting their responsibilities in solving environmental problems. Topics arousing public concern are identified: aircraft engine noise, aircraft engine emissions, airports and the environment, and environmental impacts of supersonic aircraft. Compiled in the list of over 100 publications are magazine articles, leaflets, booklets, speeches, and congressional testimony. Most of the material is non-technical and easily obtainable although a source for each of the items is included. Also listed is the suggested reading level: upper elementary and junior high school grades, secondary school grades, and adult/college/general public level. (BL)

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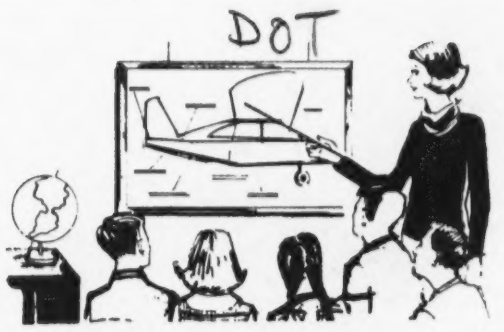

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AVIATION AND THE ENVIRONMENT

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Related to Aviation's Responses
Toward Improving the Environment

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TABLE OF CONTENTS

Page

FOREWORD.....ii

AIRCRAFT ENGINE NOISE..... 1

AIRCRAFT ENGINE EMISSIONS..... 6

AIRPORTS AND THE ENVIRONMENT..... 9

ENVIRONMENTAL IMPACTS OF SUPERSONIC AIRCRAFT...12

OTHER.....15

ADDRESSES OF SOURCES.....18

FOREWORD

Man's pollution of the environment is receiving considerable attention today. Many of man's activities have their share of environment-minded critics, and aviation is not excepted. Aircraft noise, aircraft engine emissions, the impacts of airports upon wildlife, and sonic booms are examples of aviation's contributions to environmental problems, all of which have aroused public concern.

This informal, brief bibliography purposely attempts to counteract to a small degree the negativism about aviation found in print. It stresses the positive by referring upper elementary and junior and senior high school students, college students, teachers, and the general public to a partial list of magazine articles, leaflets, booklets, speeches, congressional testimony, etc. that explain how the airlines, aircraft engine manufacturers, government agencies, military aviation and general aviation are meeting their responsibilities in solving environmental problems.

Most of the material in the bibliography is non-technical, and many of the items are readily found in school and public libraries. If they cannot be located there, they may be obtained from the sources listed at the conclusion of the bibliography. Single copies of hard-to-find periodicals usually are available from publishers at a nominal cost. The code letters following each entry refer to the suggested reading level: U--Upper elementary and junior high school grades, S--Secondary school grades, and A--Adult and college level.

Users of the bibliography are urged to update this list as required by referring to the READERS GUIDE TO PERIODICAL LITERATURE. Further information might be obtained also from state aeronautics commissions and from local aviation authorities, as well as from the Federal Aviation Administration.

The Women's Advisory Committee on Aviation wishes to thank Jane Marshall for her fine work in compiling the bibliography "Aviation and the Environment." We believe this document will be a significant contribution to the body of knowledge about our environment.

AIRCRAFT ENGINE NOISE

ACOUSTICS TECHNOLOGY, A SURVEY. National Aeronautics and Space Administration. Cat.#NAS 1.21:5093, 139 pp., illus. Available from the Supt. of Documents. 65 cents. Although this is a technical report on noise from rockets and jet aircraft, there is much information about types of aircraft noise (jet exhaust, compressor whine, sonic boom), how these noises are generated and NASA research related to aircraft noise reduction. This type of information may be useful to the general reader who requires information beyond that found in general sources. (A)

AIRCRAFT NOISE AND SONIC BOOM. Selected References. Bibliographic List No.2, December 1969. Dept. of Transportation, Office of Administrative Operations, Library Services Division. 41 pp. Free. A selected, annotated list of journal articles, reports and papers related to aircraft noise and sonic boom. Numerous items listed may be located in back issues of periodicals usually found in school and public libraries such as AVIATION WEEK, GOOD HOUSEKEEPING, BUSINESS WEEK, FLIGHT, SCIENCE, NEW REPUBLIC, READER'S DIGEST etc. Sources for obtaining documents are included. (S-A)

"The Airlines as Good Neighbors". Air Transport Association, 9pp. Free. Remarks presented by Warren N. Martin, an official of the Air Transport Association, before the Hawaiian Senate Committee on Public Health, Welfare and Housing. Feb. 11, 1970. Discusses the airlines' attacks on engine noise and smoke emission. (U-S-A)

"Air Transportation in South Florida--Will It Continue to Grow?". Air Transport Association, 14 pp. Free. Remarks of Stuart G. Tipton, President of the Air Transport Association, before the Economics Society of South Florida, Dec. 14, 1970. Pages 8-13 deal with the economic problems the airlines face in their efforts to improve the environment by reducing jet engine emissions and engine noise. (U-S-A)

"Air Transportation--with Environmental Quality". Air Transport Association, 9 pp. Free. Remarks of Stuart G. Tipton, President of ATA, before the Conference of National Organizations, May, 1970. A frank explanation of the aircraft noise and engine emission problems, describing airline efforts to solve them. (U-S-A)

Athey, Skipwith W. ACOUSTICS TECHNOLOGY. #NAS 1.21:5093. Supt. of Documents, 139 p., illus., 1970. 65 cents. A NASA survey of sources of aircraft and rocket engine noise, its effects on human beings and physical structures, how this noise is being studied, and what are the expectations for solution of the problem. Semi-technical. (A)

Bulban, Erwin J. "Lower Vibration, Noise Expected From High-Speed Piston Engines". AVIATION WEEK, Feb. 23, 1970, pp. 23-24. A description of a new type of piston engine with devices that reduce propeller noise as well as that of the engine. A 50 per cent reduction in noise level is claimed by the manufacturer. (S-A)

"Engine Inlet Change Designed for Reduced 747 Noise Levels". AVIATION WEEK, May 10, 1971, p. 28. Tells how a new engine inlet design reduces noise from engines powering the Boeing 747. (S-A)

ENVIRONMENTAL POLLUTION. A Selective Bibliography. May 1970. Cat. #PB 192 318. National Technical Information Service. $3. Lists reports available from NTIS, many of which resulted from federally sponsored research required by such departments and agencies as HEW, NASA and DOT. While the reports are technical, some may be helpful to the general reader who needs more basic information than is found in general periodicals. Sample titles of pertinent reports: "Analysis of Community and Airport Relationship/ Noise Abatement", "Aircraft Noise Evaluation", "Conference on STOL Transport Aircraft Noise Certification", "Subjective Evaluation of General Aviation Aircraft Noise", and "Some Open Questions on the Jet Noise Problem". (S-A)

FEDERAL AVIATION ADMINISTRATION AIRCRAFT NOISE ABATEMENT PROGRAM. Fiscal Year 1971-72. Dept. of Transportation. FAA Office of Environmental Quality. Nov. 16-17, 1970. 22 pp. plus appendices. Free. A presentation prepared for a Seminar on "Noise Pollution of the Urban Environment" at the University of Wisconsin, Nov. 16-17, 1970. Outlines FAA's interest and actions related to research and development programs on aircraft noise abatement, and cooperative efforts with public, industrial, and scientific groups in developing technologically practicable and economically reasonable aircraft noise regulations. Appendices include bibliographies of FAA Aircraft Noise Reports, FAA Environmental Papers (many of which are free) and descriptions of current FAA Aircraft Noise projects. (S-A)

"Federal regulation of air transportation and the environmental impact problem". UNIVERSITY OF CHICAGO LAW REVIEW. Vol. 35, p.317 (1968) 25 pp. Discusses the extent of the authority of the Civil Aeronautics Board and FAA to consider noise in their respective certification proceedings. (A)

"Fundamental Noise Research Emphasized". AVIATION WEEK, June 22, 1970, p.90. A brief report on current sound reduction research as a partof future aircraft engine design. Describes basic research by United Aircraft, General Electric, and others, dealing with the physics of jet engine noise generation. (S-A)

Hieronymous, William S. "New Landing Method Aimed at Reduction in Approach Noise." AVIATION WEEK, March 1, 1971, p. 46-47. Describes new landing procedures being tested by Northwest Airlines to reduce aircraft noise along approach paths to airports. (S-A)

Hudock, Robert P. "Crunch Coming in Aircraft Noise Rules." ASTRONAUTICS & AERONAUTICS. Nov. 1967, pp. 8-10. A review of federal aviation rules regarding limits to current and future aircraft engine noise. (S-A)

Hydrospace Research Corp. AIRCRAFT NOISE TYPE CERTIFICATION ORIENTATION SESSION. Dept. of Transportation, Federal Aviation Administration, Office of Environmental Quality. October 1970, 93 p., illus., One copy free. Supply limited. A report on an orientation session for FAA personnel on techniques and procedures for measuring aircraft noise. Includes talks by FAA officials and lectures given by noise measurement experts. Semi-technical. (A)

Mecklin, John M. "It's Time to Turn Down All that Noise." FORTUNE, Oct. 1969, pp. 130-133+. Includes discussion of aircraft noise and includes interesting Japanese-developed colored "portraits" of six various sounds (a Paganini concerto, city traffic, pile driver, aircraft, etc.). Also includes an FAA color diagram of the area around Chicago's O'Hare International Airport, showing noise levels from 1970 projected air traffic. (S-A)

NASA Acoustical Treated Nacelle Program. National Aeronautics and Space Administration. Cat.#N70 13901. 165 pp., 1969. $3. Available from the National Technical Information Service. A report on NASA-industry research on reducing jet engine noise by treating the engine nacelle acoustically. Includes information on flight tests and economic implications. Semi-technical. (A)

"NASA's Quiet Engine Program Focuses Anti-Noise Effort". AVIATION WEEK, June 22, 1970, pp. 88-89. Discusses briefly work on turbofan engine design carried on by NASA and the General Electric Company to meet "quiet" operation standards. New "quiet engine" standards goals are compared with the current JT3D turbofan engine. (A)

"New Rotors Quiet OH-6". AVIATION WEEK, April 19, 1971, p. 21. A brief illustrated article explaining modifications of an Army helicopter to reduce its noise. Changes included installation of a muffler and acoustic blanket on the engine, and redesigning the shape of the rotor blade tips to reduce tip vortex noise. (S-A)

News Release. May 5, 1971. Dept. of Transportation, Federal Aviation Administration, Office of Environmental Quality, 3 p. Free. A summary of legislative action and research projects relating to the abatement of aircraft noise and noise impacts. (S-A)

NOISE EXPOSURE FORECASTS: EVOLUTION, EVALUATION, EXTENSIONS, AND LAND USE INTERPRETATIONS. #AD711 131. National Technical Information Service, 60 pp., August 1970. $3. A contractor's report made at the request of the Office of Environmental Quality, FAA. While this is a technical report, parts of it will be useful to the general reader, particularly those sections dealing with the history of noise rating, methods used to rate noise, and charts showing the relationship between aircraft noise and land uses. (S-A)

O'Lone, Richard G. "Noise Factor to Pace STOL Effort." AVIATION WEEK, June 7, 1971, p. 48-49. A report on the design of a new STOL (short takeoff and landing) air transport, and how noise reduction is expected to affect the design. (S-A)

Powers, Joseph K. AIRCRAFT NOISE STANDARDS AND REGULATIONS. Dept. of Transportation, Federal Aviation Administration, Office of Environmental Quality, 70 p., illus., 1971. Free. Discusses sound energy and human reaction, the history of the development of the PNdB (perceived noise decibel), methods of rating aircraft noise exposure, land use planning to minimize aircraft noise impacts, FAA research activities related to aircraft noise, and FAA's proposed rulemaking and standards. (A)

_____. THE FEDERAL AVIATION ADMINISTRATION'S ENVIRONMENTAL ACTIVITIES. Dept. of Transportation, Federal Aviation Administration, Office of Environmental Quality, 29 p., illus., March 1971. Free. A concise statement presented before the Bay Area Air Transportation Conference, San Francisco, California. Outlines FAA's present involvement in aircraft noise reduction efforts. Illustrated with charts that accompanied the presentation. (S-A)

"Quiet Fan Test Promises Cut in Noise Levels". AVIATION WEEK, April 5, 1971, p.21. A brief report on four experimental fan jet engines built by General Electric which are undergoing tests at NASA's Lewis Research Center. Preliminary test data indicate the engines will operate at substantially reduced noise levels even without acoustical treatment. (S-A)

"Reviews". ENVIRONMENT, Nov. 1970, pp. 44-45. A review of a technical report---"Transportation Noises: A Symposium on Acceptability Criteria" edited by J.D. Chalupnik. A major portion of the review considers aircraft noise. In non-technical language it cites a study at London's Heathrow Airport showing that people who complained about aircraft noise were usually sensitive to other forms of annoyance. Other relevant findings are discussed.

Rockwell, Robert N. AIRPORT NOISE AND AIRCRAFT OPERATIONS. Air Line Pilots Association, 7 p., April 29, 1971. Free. An address presented at the Federal Aviation Administration National Aviation System Planning Review Conference outlining procedures that airline pilots follow to reduce aircraft noise on takeoffs and landings. Also discusses the development of quiet jet engines, and airport zoning regulations designed to reduce annoyance caused by aircraft operations. Gives the pilot's viewpoint on these procedures and efforts, and makes suggestions for their improvement. (S-A)

"Run-up Noise Reduced". NAVAL AVIATION NEWS. Jan. 1971, p. 4. Available from Supt. of Documents. 45 cents. A brief description of a noise reduction device developed by the Navy for use during engine run-up tests. (S-A)

Schwartz, Adele C. "Retrofit: Is the Quiet Worth the Cost?" AIRLINE MANAGEMENT AND MARKETING, Feb. 1971, pp. 32-35. Reviews the possibilities of remodeling jet engines powering the Boeing 707s and the DC8's, as well as other jet engines used by the airlines. Considers the cost and timing of "retrofitting", including federal financial aid as part of the nation's environmental improvement program. (S-A)

Seago. "Airport Noise Problems and Airport Zoning." MARYLAND LAW REVIEW, Vol. 28, (1968) pp. 120-136. A review of the cases in this problem area, with suggestions for airport zoning legislation. (A)

2ND FEDERAL AIRCRAFT NOISE ABATEMENT PLAN. FY1970-71. #5000-0047. Supt. of Documents, 65 p., illus., January 1971. 65 cents. A non-technical review of federal government plans for reducing aircraft noise around airports and along aircraft approach and takeoff paths. Discusses milestones in aircraft noise abatement, aircraft noise and its impacts on the urban environment, the sonic boom phenomenon, and noise research and development programs of NASA, the U.S. Air Force, the U.S. Dept. of Health, Education, and Welfare, The U.S. Dept. of Transportation, plus those of the jet engine and aircraft manufacturers. A glossary and bibliography are included. (S-A)

"Shhh---". FORBES, Mar. 15, 1970, p. 31. Discusses costs in dollars and payloads to retrofit the Boeing 707 and DC-8 jet engines with insulation and new mountings to reduce noise. (S-A)

Society of Automotive Engineers and U.S. Dept. of Transportation. PROCEEDINGS. CONFERENCE ON AIRCRAFT AND THE ENVIRONMENT. Part 1. Society of Automotive Engineers, 305 p., illus., 1971. $25. Proceedings of a conference held in February 1971 during which leaders from the aircraft manufacturing industry, the airlines, general aviation local, state and federal government agencies, and the academic community considered the environmental effects of aircraft and airports. Topics discussed included aircraft noise, sonic booms, land use planning for airports, engine emissions, and the government's role in reducing aviation's environmental impacts. This landmark conference produced numerous viewpoints which are recorded in the conference proceedings. While the report is somewhat technical, much of it can be readily understood by the general reader. (S-A)

_____ PROCEEDINGS. CONFERENCE ON AIRCRAFT AND THE ENVIRONMENT. Part 2. #PB 202 038. Available from the National Technical Information Services, 97 p., illus., 1971. $3. Reports from the Plenary Session of the Conference during which leaders in the aviation industry, in government, and the universities discussed aircraft noise, jet engine emissions, the sonic boom, and airport planning; how these factors affect the quality of life; and how they can be modified to minimize their undesirable impacts. Also includes the conclusions and recommendations of the Conference. (S-A)

"State Aviation Agencies--Where in Hell Do They Fit In?" BUSINESS & COMMERCIAL AVIATION, Feb., 1971, pp. 58-60. A portion of this article discusses the role of state aviation authorities with respect to alleviating aircraft noise. (S-A)

Stephen, John E. and L. Tondell. LEGAL AND RELATED ASPECTS OF AIRCRAFT NOISE REGULATION 206 (Committee Print 1967). Available from the House Committee on Interstate and Foreign Commerce. Free. Papers presented at the International Conference on the Reduction of Noise and Disturbance Caused by Civil Aircraft. London, England, No. 22-30, 1966. Titles of papers: "Regulation by Law of Aircraft Noise Levels, from the Viewpoint of U. S. Airlines", and "Legal and Related Aspects of Airport Land Use Planning". (A)

U.S. Dept. of Transportation and National Aeronautics and Space Administration. CIVIL AVIATION RESEARCH AND DEVELOPMENT POLICY STUDY. #PB-198 802. National Technical Information Service, 106 p., 1971. Paperback, $3. A comprehensive report, sponsored jointly by DOT and NASA, reviewing national policies affecting civil aviation, the problems confronting aviation, and the potentials it has for future contributions to the nation. Discusses such subjects as economic impacts, benefits from past safety policies, civil aircraft manufacturing, aircraft noise, and ground congestion related to air transportation. Concludes that further research can contribute to the solution of these problems--especially aircraft noise, congestion, and short haul transportation. Appendix A refers the reader to a second volume of supporting papers covering a variety of technical and non-technical subjects (commercial air transportation, air cargo, general aviation, airports, air traffic control, environmental factors, military contributions to civil aviation, foreign competition, and other pertinent subjects). This second volume, also available from the National Technical Information Service (#PB-198 803, 250 p., 1971, $3), provides analyses of the characteristics and growth to date, current problems, future requirements, potential solutions, implications for research and development, and recommendations on the elements which make up civil aviation or are factors having a bearing on civil aviation. All these factors have environmental implications. (A)

Vickers, Tirey K. "Improving the Airport Environment". JOURNAL OF AIR TRAFFIC CONTROL, March, 1971, pp. 17-21. Discusses causes of excessive, unnecessary, and expensive engine-produced air pollution and noise at major airports. Demonstrates how airport terminal designs and the concept of exclusive airline gate positions contribute to costly fuel consumption and consequent air pollution and noise on the ground. Describes some solutions to these problems. (S-A)

AIRCRAFT ENGINE EMISSIONS

"Airlines Evaluate Modification to Eliminate Jet Fuel Dumping". AVIATION WEEK, Feb. 1, 1971, p. 26. A brief report on proposed tests by seven airlines of a minor change in some models of Pratt and Whitney jet engines that may eliminate the need for dumping small amounts of jet fuel on takeoff. (S-A)

"The Airlines As Good Neighbors". Air Transport Association, 9 pp. Free. Remarks presented by Warren N. Martin, an official of the Air Transport Association, before the Hawaiian Senate Committee on Public Health, Welfare, and Housing, Feb. 11, 1970. Discusses the airlines' attacks on engine noise and smoke emission. (U-S-A)

"Air Transportation in South Florida--Will It Continue to Grow?" Air Transport Association, 14 pp. Free. Remarks of Stuart G. Tipton, President of ATA, before the Economics Society of South Florida, Dec. 14, 1970. Pages 8-13 deal with the economic problems the airlines face in their efforts to improve the environment by reducing jet engine emissions and noise. (S-S-A)

"Air Transportation--with Environmental Quality". Air Transport Association, 9 pp. Free. Remarks of Stuart G. Tipton, President of ATA, before the Conference of National Organizations, May 1970. A frank explanation of the aircraft noise and engine emission problems, describing airline efforts to solve them (U-S-A)

"The Elimination of Jet Fuel Venting". Air Transport Association, 1 page, 2 sides. Feb. 19, 1971. Free. A Fact Sheet discussing fuel venting--what it is and what airlines are doing about it now. (U-S-A)

ENVIRONMENTAL QUALITY. 1st Annual Report of the Council on Environmental Quality. August 1970. Supt. of Documents, Cat. #PREX14.1:970. $1.75. Describes conditions, identifies trends, problems, actions under way, and opportunitites for the future. See P. 98--aircraft vapor trails. Appendices include the National Environmental Policy Act of 1969, Public Law 91-190, Jan. 1, 1970, and the Environmental Quality Improvement Act of 1970, Public Law 91-244, Apr. 3, 1970. (S-A)

"Fuel Venting" Air Transport Association, 4 pp. Free. Testimony of Roger G. Flynn, an ATA official, before the Commissioner, Department of Air Resources, New York City, Dec. 2, 1970. Describes in clear detail what fuel venting is and the amounts vented by current jet engines powering the Boeing 707, 727, and 747. Also explains possible solutions to the problem now under study by jet engine manufacturers. (U-S-A)

"How the airlines are reducing jet pollution". Air Transport Association, 16 pp. illus., 1971. Free. A detailed non-technical discussion of the efforts being made by the U.S. scheduled airlines to reduce aviation's contributions to air pollution. Includes numerous charts comparing emissions of all sources, and those from older and newer aircraft engines. (U-S-A)

"Latest Moves on Pollution Control". U.S. NEWS & WORLD REPORT, Feb. 2, 1970, p.5. Brief description of airlines' plans for cooperating with the federal government to reduce jet engine smoke emissions. (U-S-A)

"Nature and Control of Aircraft Engine Exhaust Emissions". Northern Research and Engineering Corp. Cat. #PB-187 771, Nov. 1968, 388 pp. Available from the National Technical Information Service. $6. A study prepared for the National Air Pollution Control Administration, Department of Health, Education, and Welfare. Reports on the nature and extent of aircraft piston and jet engine exhaust emissions and their impacts. Evaluates ways of reducing these pollutants and how government regulations might control aircraft engine exhausts. A source of basic information including many interesting informative charts. Semi-technical. (S-A)

Sawyer, Robert F. "Reducing Jet Pollution Before It Becomes Serious". ASTRONAUTICS & AERONAUTICS, April 1970., pp. 62-67. Analyzes invisible harmful jet engine pollutants and how they form. Indicates jet engine design can eventually eliminate them. Includes several charts comparing various turbojet emissions with those of automobiles. (S-A)

Sellman, Edmund W. "Information Brief on Federal Aviation Administration Action Concerning Aircraft Engine Emissions". Dept. of Transportation. Federal Aviation Administration, Office of Environmental Quality. May 3, 1971. Free. A brief report on results of FAA efforts toward reducing jet engine smoke and its invisible components in flight and in ground maneuvers (start-up, taxiing, run-up, takeoff) including methods for measuring emissions. (S-A)

_____INFORMATION BRIEF ON ATMOSPHERIC POLLUTION DUE TO FUEL DISCHARGE FROM JET AIRCRAFT. Dept. of Transportation, Federal Aviation Administration, Office of Environmental Quality. 5 pp., Mar. 14, 1971. Free. A brief explanation discussing the necessity for disposing of "residual fluids from various engine systems" which collect when the aircraft is on the ground. Also discusses manual emptying on the ground, airborne venting of such fluids after takeoff, and methods for eliminating airborne venting now undergoing test to conform to the enactment of the federal Clean Air Amendments of 1970. (S-A)

Society of Automotive Engineers and U.S. Dept. of Transportation. PROCEEDINGS. CONFERENCE ON AIRCRAFT AND THE ENVIRONMENT. Part 1. Society of Automotive Engineers, 305 p., illus., 1971. $25. Proceedings of a conference held in February 1971 during which leaders from the aircraft manufacturing industry, the airlines, general aviation local, state and federal government agencies, and the academic community considered the environmental effects of aircraft and airports. Topics discussed included aircraft noise, sonic booms, land use planning for airports, engine emissions, and the government's role in reducing aviation's environmental impacts. This landmark conference produced numerous viewpoints which are recorded in the conference proceedings. While the report is somewhat technical, much of it can be readily understood by the general reader. (S-A)

_____ PROCEEDINGS, CONFERENCE ON AIRCRAFT AND THE ENVIRONMENT. Part 2. #PB 202 038. Available from the National Technical Information Services, 97 p., illus., 1971. $3. Reports from the Plenary Session of the Conference during which leaders in the aviation industry, in government, and the universities discussed aircraft noise, jet engine emissions, the sonic boom, and airport planning; how these factors affect the quality of life; and how they can be modified to minimize their undesirable impacts. Also includes the conclusions and recommendations of the Conference. (S-A)

"Toward a Cleaner Sky". SKYLIGHTS, Nov. 1970, pp. 1-2+. National Aerospace Education Council. Discusses what the airlines and manufacturer of the JT8D jet engine are doing to eliminate engine smoke. OUT OF PRINT. Check your school or public library. (U-S-A)

"U.S. Hands Airlines Anti Smoke Timetable." AVIATION WEEK, Jan. 26, 1970, pp. 33-34. A report on how the airlines and federal government initiated steps to reduce jet engine smoke emission on the JT8D engine. Also discusses state government actions against jet engine smoke. (S-A)

Vickers, Tirey K. "Improving the Airport Environment". JOURNAL OF AIR TRAFFIC CONTROL, March, 1971, pp. 17-21. Discusses causes of excessive, unnecessary, and expensive engine-produced air pollution and noise at major airports. Demonstrates how airport terminal designs and the concept of exclusive airline gate positions contribute to costly fuel consumption and consequent air pollution and noise. Describes some solutions to these problems. (S-A)

Watkins, Harold D. "Carriers Seek Alternatives to Turbojet Fuel Dumping". AVIATION WEEK, Nov. 2, 1970, pp. 27-28. Explains briefly what fuel "dumping" or venting is, and what the airlines are doing to find a solution to this minimal contribution to air pollution. (U-S-A)

Yaffee, Michael L. "Air Force Laboratory Studies Jet Engine Pollution Control". AVIATION WEEK, Feb. 1, 1971, p. 58-59. Reports on Air Force studies toward reducing unburned hydrocarbons, carbon monoxide, and nitrogen oxides. Six research projects are briefly described. (S-A)

AIRPORTS AND THE ENVIRONMENT

"The Airport and the Environment". AIRPORT PLANNING AND FINANCING, pp. 4-5, a publication from a kit of materials entitled How to Land An Airport in Your Community. Undated. Free. Available from the General Aviation Manufacturers Association. Discusses briefly the points to be considered when planning a new airport or airport expansion to ensure that proposed plans are compatible with the environment. Advice is of special importance if federal funds are to be required. (U-S-A)

AIRPORT LAND NEEDS. Arthur D. Little, Inc. 85 pp. 1966. A report stressing the needs for long-term advance planning for airports to reduce costs and to provide for the most compatible uses of land adjoining future airport properties. (S-A)

"Ecology--Defuzzing the Time Bomb". AIRMAN magazine, Jan. 1971. Available from the Supt. of Documents. 60 cents. This issue includes eight articles that discuss howthe Air Force is involved in a" new kind of warfare against environmental damage". Explains Air Force efforts to reduce pollution of water and air, recycle wastes, control fuel spillage, and conserve soil and forests at Air Force bases. (U-S-A)

"The Ecology of a Community Airport". An illustrated leaflet from a kit of materials entitled HOW TO LAND AN AIRPORT IN YOUR COMMUNITY. Undated. Free. Available from the General Aviation Manufacturers Association. Discusses briefly how a "thoughtfully planned" airport can be an "economic boom---without being an ecological bust". (U-S-A)

ENVIRONMENTAL QUALITY. 1st Annual Report of the Council on Environmental Quality. August 1970. Supt. of Documents, Cat. #PREX 14.1:970. $1.75. Describes conditions, identifies trends, problems, actions under way and opportunities for the future. See p. 195---development of airports. Appendices include the National Environmental Policy Act of 1969, Public Law 91-190, Jan. 1, 1970; and the Environmental Quality Improvement Act of 1970, Public Law 91-244, April 3, 1970. (S-A)

James, George W. "Will Environmental Solutions Make Airports Disappear?" Airport Operators Council International. $3. A speech presented before the AOCI's Environmental Planning Conference held in March 1971. Discusses aircraft noise and exhaust at airports, and what the airlines are doing to reduce them. Points out the economic value of an airport and how airport environmental problems can be minimized. Indicates at what point judgments must be made by airport authorities and the public as to "trade-offs" between environmental factors and the economic benefits of an airport. (S-A)

Lamberton, H.C., Jr. "Natural Environment Impacts of Airports Built in Bodies of Water". Airport Operators Council International. $3. A speech prepared for the AOCI's Environmental Planning Conference held in March 1971. Discusses impacts to be expected from construction activities, and ecological changes coming into play after the airport begins operation. Considers such items as removal of soil, silting effects, drainage, water pollution, and treated sewage, fuel and oil spills, loss of wildlife habitats--and the ultimate consequences of neglecting these environmental factors. Proposes plans for studying these expected effects and ways to minimize the impacts. (S-A)

McFarland, William V. "EPA Requirements Affecting Airports". Airport Operators Council International. $3. An address given before the AOCI's Environmental Planning Conference held in March 1971. Explains the federal government's Environmental Protection Agency and its relationships to the planning and construction of airports. Emphasizes airport impacts on the environment and the responsibility of airport planners to minimize them. (S-A)

NOISE EXPOSURE FORECASTS: EVOLUTION, EVALUATION, EXTENSIONS, AND LAND USE INTERPRETATIONS. #AD711 131. National Technical Information Service, 60 pp. August 1970. $3. While this is a technical report, parts of it will be useful to the general reader--particularly the section showing the relationship between aircraft noise and land uses. (S-A)

"Pollution Control at Washington National". AIRPORT, Feb. 1971, p. 19. Explains how detergents, solvents, lubricants, hydraulic fluids, metal particles, and other kinds of water borne airport contaminants are specially treated at the airport before release to the public sewage treatment plant. (S-A)

Schimpeler, Charles C. "Airport Planning and the Environment". AIRPORT WORLD, March 1971, p. 15-17. Discusses the problems of airport planning, citizen participation in such planning, federal government guidelines and laws related to airport planning, and the consideration of environmental as well as economic factors. (S-A)

Seago. "Airport Noise Problems and Airport Zoning". MARYLAND LAW REVIEW, Vol. 28, p. 120 (1968). A review of the cases in this problem area, with suggestions for airport zoning legislation. (A)

Seubert, John L. "Birds and Airport Safety". Airport Operators Council International. $3. An address given before the AOCI's Environmental Planning Conference held in March 1971. Discusses the need for airport planners and operators to consider bird hazards at airports, and how proper management of the environment (the elimination of garbage dumps which attract birdlife, for example) can reduce these hazards to aircraft flying into and out of airports. (S-A)

Sims, William R. and A.J. Cerchione. "In Search of an Aviation Environment Master Plan". AIR UNIVERSITY REVIEW, Sept.-Oct. 1969, pp. 64-72. 75 cents. Discusses the problem arising from suburban encroachment on Air Force bases, the importance of military-community relations, and the role of zoning and proper land use in planning for future air base and airport sites. A resume in chart form of aircraft noise relationships to Federal Housing regulations is included. (S-A)

Society of Automotive Engineers and U.S. Dept. of Transportation. PROCEEDINGS. CONFERENCE ON AIRCRAFT AND THE ENVIRONMENT. Part 1. Society of Automotive Engineers, 305 p., illus., 1971. $25. Proceedings of a conference held in February 1971 during which leaders from the aircraft manufacturing industry, the airlines, general aviation, local, state and federal government agencies,

and the academic community considered the environmental effects of aircraft and airports. Topics discussed included aircraft noise, sonic booms, land use planning for airports, engine emissions, and the government's role in reducing aviation's environmental impacts. This landmark conference produced numerous viewpoints which are recorded in the conference proceedings. While the report is somewhat technical, much of it can be readily understood by the general reader. (S-A)

_____ PROCEEDINGS. CONFERENCE ON AIRCRAFT AND THE ENVIRONMENT. Part 2. #PB 202 038. Available from the National Technical Information Services, 97 p., illus., 1971. $3. Reports from the Plenary Session of the Conference during which leaders in the aviation industry, in government, and the universities discussed aircraft noise, jet engine emissions, the sonic boom, and airport planning; how these factors affect the quality of life; and how they can be modified to minimize their undesirable impacts. Also includes the conclusions and recommendations of the Conference. (S-A)

"The State of the Union Now and in Decade Ahead". U.S. NEWS & WORLD REPORT, Feb. 2, 1970, pp. 63-67. Full text of President Nixon's "State of the Union" address before Congress, Jan. 22, 1970. A reference is made (p. 67) to the location of future airports with respect to the environment and "a balanced growth for America". (U-S-A)

Stephen, John E. and L. Tondell. LEGAL AND RELATED ASPECTS OF AIRCRAFT NOISE REGULATION. 206 (Committee Print 1967). Available from the House Committee on Interstate and Foreign Commerce. Free. Papers presented at the International Conference on the Reduction of Noise and Disturbance Caused by Civil Aircraft. London, England, Nov. 22-30, 1966. See paper entitled "Legal and Related Aspects of Airport Land Use Planning". (A)

Vickers, Tirey K. "Improving the Airport Environment". JOURNAL OF AIR TRAFFIC CONTROL, March 1971, pp. 17-21. Discusses causes of excessive, unnecessary, and expensive engine produced air pollution and noise at major airports, Demonstrates how airport terminal designs and the concept of exclusive airline gate positions result in costly fuel consumption and consequent noise and air pollution. Describes some solutions to these problems. (S-A)

ENVIRONMENTAL IMPACTS OF SUPERSONIC AIRCRAFT

AIRCRAFT NOISE AND SONIC BOOM. Selected References. Bibliographic List No. 2, December 1969. Dept. of Transportation, Office of Administrative Operations. Library Services Division. 41 pp. Free. A selected, annotated list of journal articles, reports and papers related to aircraft noise and sonic boom. Numerous items listed may be located in back issues of periodicals usually found in school and public libraries such as AVIATION WEEK, GOOD HOUSEKEEPING, BUSINESS WEEK, FLIGHT, SCIENCE, NEW REPUBLIC, READER'S DIGEST, etc. Sources for obtaining documents are included. (S-A)

Beranek, Leo. "SST Environment Effects". Airport Operators Council International. $3. A speech prepared for the AOCI's Environmental Planning Conference held in March 1971. While the speech refers to slides which illustrated the lecture, the text provides considerable information about jet engine noise, how it is measured, and how new designs for jet engines (particularly those developed to power the SST) result in very noticeable noise reduction. (S-A)

Chatham, George N. "Will the SST Change the Weather?" ASTRONAUTICS & AERONAUTICS, Jan. 1970, pp. 8-9. Considers the effects of vapor trails emitted by a fleet of 400 SST's. Cites scientific opinion and compares SST vapor emissions with those of automobiles. Discusses natural balance of atmospheric moisture and concludes the SST would produce only miniscule additions. (S-A)

_____ and Franklin P. Huddle. THE SUPERSONIC TRANSPORT. #71-78 SP. Congressional Research Service, Library of Congress. Feb. 26, 1971, 135 pp. Free. Part VI discusses "The Issue of the Environmental Impact of the SST"., including the sonic boom, jet engine sound, air pollution, weather modification, the "greenhouse effect", water vapor in the stratosphere, etc. (S-A)

"Concorde Environmental Effects Studied". AVIATION WEEK, Feb. 8, 1971, p. 78-71. A report of sonic boom effects resulting from flights of the British-French supersonic transport, Concorde. Tells about effects on ancient, historical buildings, farm animals and human beings, and how these effects were measured. (U-S-A)

Daniels, Gerald M. "SST Environmental Effects: Some Considerations". ASTRONAUTICS & AERONAUTICS, Nov. 1970, pp. 22-25+. A review of the SST's possible effects on the atmosphere as compared with natural effects caused by solar radiation, thunderstorms, volcanic activity, etc. (S-A)

"DOT Using Mathematical Models to Study SST Climate Effects". AVIATION WEEK, Jan. 25, 1971, p. 42. Describes briefly the objectives and methods of a proposed plan for studying the impacts of SST flight on the atmosphere. (S-A)

Goldwater, Barry. "The Facts on SST". VITAL SPEECHES, Nov. 1, 1970, pp. 40-41. A speech before the U.S. Senate, Oct. 2, 1970, presenting a rebuttal against arguments concerning the adverse environmental effects of the SST. (S-A)

Gravel, Mike. "The Supersonic Transport--the Ecology and Economics." Dept. of Transportation, Office of SST Development. 4 pp., July, 1970. Free, in limited supply. A reprint from AEROSPACE magazine. The first part presents facts regarding common myths about the SST's effects upon the environment--engine noise, sonic boom, atmospheric pollution, etc. (U-S-A)

Hotz, Robert. "Supersonic Shock Wave" AVIATION WEEK, Dec. 14, 1970, p. 11. An editorial criticizing the U.S. Senate's rejection of funding the SST prototype program for Fiscal Year 1971. Especially points out how Senator's negative votes could be considered as votes against progress in scientific and technological research. (U-S-A)

"Letters to the Editor". AVIATION WEEK, Jan. 11, 1971, p. 70; Jan. 18, 1971, p. 58; and Jan. 25, 1971, p. 58. Readers' pro and con reactions to an AVIATION WEEK editorial, "Supersonic Shock Wave", appearing in the December 14, 1970 issue. See item by Robert Hotz listed immediately above this entry. (U-S-A)

Magruder, William M. THE SST AND THE NATIONAL INTEREST (SST WHITE PAPER). Dept. of Transportation, Office of SST Development, 88 p., illus., 1971. Free. Section 4 (26 pages) entitled "The Environment and the SST", deals with such environmental concerns as SST engine exhaust emissions, sonic boom impact, community noise, and atmospheric and meteorological impacts of supersonic flight. (A)

Schwartz, Adele C. "SST vs. Ecology". AIRLINE MANAGEMENT AND MARKETING, Oct. 1970, pp. 28-30. Discusses plans for scientific research on ecological arguments against the SST, such as engine noise, effects on climate, and solar radiation. Also reports briefly on the sonic boom reactions to the Concorde test flights. (U-S-A)

Schwartz, Ira A., editor. SECOND CONFERENCE ON SONIC BOOM RESEARCH. Supt. of Documents, Cat. # NAS 1.21:180, 193 pp., 1968. $1. A compilation of 19 papers presented at a NASA conference reporting on the previous year's progress in developing methods of analyzing and devising means of reducing sonic boom for practical aircraft design. (A)

"Scientists Argue Environmental Effects". AVIATION WEEK, Dec. 14, 1970, p. 21. A report on what scientists consider as the main atmospheric effects of the SST. Also discusses preliminary measurements of these effects and the current lack of knowledge about them. (S-A)

Seabass, A.R., editor. SONIC BOOM RESEARCH. Supt. of Documents. Cat. #NAS 1.21:147, 118 pp., 1967. 50 cents. A compilation of five papers presented at a NASA conference on possibilities of reducing sonic boom overpressures, basic theory, the effects of aircraft operation and the atmosphere on sonic booms, and the effects of sonic booms on people and structures. (A)

Senator Dole's Letter. Dept. of Transportation, Office of SST Development, 6 pp., Oct. 21, 1970. Free in limited supply. A reprint of a letter sent by Senator Robert Dole to a number of senators presenting his reasons why he is in favor of proceeding with the SST program. Of special interest is a summary in table form concerning SST environmental effects (pp. 5 and 6). (U-S-A)

"Simple Supersonic Truths". Aerospace Industries Association, 16 pp., undated. Free. Interesting statements supporting the position that the SST will have little significant effects upon the atmosphere. Discusses ozone, water vapor, carbon dioxide, etc., and presents comments of Dr. Will Kellogg of the Laboratory of Atmospheric Sciences, University of Colorado. (U-S-A)

"SST--Fantasy and Fact". Aerospace Industries Association. Feb. 1971. Free. A brochure refuting major arguments against the SST including those of noise, sonic boom, and air and stratospheric pollution. (U-S-A)

"Summary of SCEP Report". Dept. of Transportation, Office of SST Development. Free in limited supply. A sheet summarizing evaluations from the MIT-sponsored Study of Critical Environmental Problems on probable environmental effects of SST flights at high altitudes. (S-A)

"The Supersonic Transport and the Environment". The Boeing Company, 8 pp., illus., revised Jan. 1971. Free. Discussed probable environmental impacts of the SST's engines. Compares them with autos, piston aircraft engines, trains, and ocean liners with respect to fuel comsumption versus transportation productivity. (U-S-A)

"Supersonic Transport Development Program--Environmental Concerns Expressed". Dept. of Transportation, Office of SST Development. 5 pp., undated. Free in limited supply. Examines possible environmental effects of the SST (sonic boom, climatic changes, engine noise) and presents opinions of scientists. Points out that two prototype SSTs will have no significant adverse impacts on the environment. (U-S-A)

Sutton, Horace. "Is the SST Really Necessary?" SATURDAY REVIEW, Aug. 15, 1970, pp. 14-17+. An objective and balanced examination of the charges against the SST including noise, sonic boom, and pollution of the stratosphere. Includes quotations from SST opponents and proponents in scientific and government circles. Note: A free reprint of this article may be obtained from the Office of Special Projects (SS-4) SST Development, Dept. of Transportation, Washington, DC 20590. (U-S-A)

OTHER

"Airmen Urged to Photograph Examples of Air Pollution". Aircraft Owners and Pilots Association. Single copy free. Supply limited. A news release describing how general aviation pilots can use their aircraft and cameras to discover, photograph, and report sources of air pollution which they notice while flying. (U-S-A)

Government Reports Topical Announcements. "Environmental Pollution and Control" series. A subscription service listing reports of federally sponsored research on environmental problems. While many reports are of a scientific or technical nature, an increasing percentage are concerned with social and economic aspects. Noise and air pollution are included in the listings. Each entry contains a complete bibliographic citation including title, corporate source, authors, date, or abstract, stock number and price. Published semi-monthly. $5 per year. Both subscription service and reports are available from the National Technical Information Service. (A)

Congressional hearings. Hearings often contain valuable non-technical information. For details as to availability and price, write to the Supt. of Documents, Government Printing Office, Washington, D. C. 20402. Be sure to describe the kinds of hearings you require, such as hearings related to sonic boom, the SST, aircraft engine noise, jet engine exhaust emissions, etc. (S-A)

Federal Laws. Copies of the following Public Laws dealing with the environment in general may be obtained from the Supt. of Documents, Government Printing Office, Washington, DC 20402:

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969. Public Law 91-190. Jan. 1970. Cat. # GA 4.110:91-190. 10 cents. Requires federal agencies and departments to state the environmental impacts of proposed legislation, alternatives, impacts that cannot be avoided, and comments of state, and local governments, so as to permit state, local and other federal agencies to review environmental implications BEFORE any project is undertaken. (S-A)

ENVIRONMENTAL QUALITY IMPROVEMENT ACT OF 1970. Public Law 91-224, April 3, 1970. Cat # GS4.110:91-224. 20 cents. This law established the Office of Environmental Quality, under the Executive Office of the President, to work in such areas as appraising the effectiveness of federal departments' and agencies' environmental programs, promoting environmental research, collecting and interpreting data related to environmental quality, cooperating with public and private organizations and institutions, and reporting its activities and findings to Congress as required by Public Law 91-190. (S-A)

Nicholson, Max. THE ENVIRONMENTAL REVOLUTION. Hodder and Stoughton, publishers. London, 366 pp., illus., 1970. $10.80. Aviation (military, commercial air transportation, private flying, helicopters, gliding and model aircraft flying) are treated briefly in Annex II--Chart of Human Impacts on the Countryside. Each is evaluated in relation to the area affected, nature of effects, and incidence. (S-A)

PAN AM ENDORSES WORLD WILDLIFE FUND PROGRAM. Pan American World Airways. A free 4-page leaflet announcing the airline's policy of support for the World Wildlife Fund, whereby Pan Am will no longer book any land tour arrangements or sponsor any brochures which would encourage the hunting and killing of animals classified as "endangered species" by the World Wildlife Fund. The leaflet also provides background information on the World Wildlife Fund and Pan Am's relationship to this international conservation organization. (U-S-A)

NOTE: The Environmental Education Act(Public Law 91-516, Oct. 30, 1970) was enacted, in part, to encourage and support the development of curricula dealing with man and his relationship to natural and man-made surroundings, and to provide special training programs for teachers. The act sets up an "office of environmental education" under the Dept. of Health, Education and Welfare, U.S. Office of Education. As of April 1971, this "office of environmental education" has not yet been organized. However, the Office of Education's Environmental Education Studies Staff has published a 46-page booklet entitled "Education That Cannot Wait". The book defines environmental education and explains its broad aims (which are by no means limited to formal educational materials). The roles of state and federal agencies in fostering environmental education are also discussed. Also available is a handbook of guidelines for preparing proposals for environmental education projects, to obtain federal funds to implement such projects. A free single copy of each may be obtained by writing to the Environmental Education Studies Staff, US Office of Education, Washington, D. C. 20202. (A)

ADDRESSES OF SOURCES

Aerospace Industries Association
1725 DeSales St. NW
Washington, D. C. 20036

Aircraft Owners & Pilots Assoc.
P.O. Box 5800
Washington, D. C. 20014

Airline Management & Marketing/
American Aviation
1156 15th St. N.W.
Washington, D. C. 20005

Air Line Pilots Assoc.
1329 E. St. NW
Washington, D. C. 20004

Airport Operators Council Internat'l
1700 K St. NW
Washington, D. C. 20006

Airport World
49 Riverside Ave.
Westport, Conn. 06880

Air Transport Assoc. of America
1000 Connecticut Ave. NW
Washington, D. C. 20036

Air University Review
Air University Book Dept.
Maxwell Air Force Base, Ala. 36112

Astronautics & Aeronautics
1290 Avenue of the Americas
New York, N. Y. 10019

Aviation Week & Space Technology
330 West 42nd St.
New York, N. Y. 10036

The Boeing Company-Public Affairs
955 L'Enfant Plaza, S.W.
Washington, D. C. 20024

Business & Commercial Aviation
One Park Avenue
New York, N.Y. 10016

Congressional Research Service
Library of Congress
Washington, D. C. 20540

Dept. of Transportation
Office of SST Development
Federal Aviation Administration
Washington, D. C. 20590

Environment
Committee for Environmental Information
438 No. Skinker Blvd.
St. Louis, Mo. 63130

Forbes Magazine
60 Fifth Ave.
New York, N.Y. 10011

Fortune Magazine
Time-Life Bldg.
1271 Avenue of the Americas
New York, N.Y. 10020

General Aviation Mfgs. Assoc.
1025 Connecticut Avenue, NW
Washington, D. C. 20036

Hodder and Stoughton, Ltd.
St. Paul's House, Warwick Lane
London EC4, England

House Committee on Interstate and
Foreign Commerce
Rayburn House Office Bldg., Room 2125
Washington, D. C. 20024

Journal of Air Traffic Control
525 School St. S.W., Suite 409
Washington, D. C. 20024

Arthur D. Little, Inc.
630 Fifth Ave.
New York, N.Y. 10020

Maryland Law Review
500 West Baltimore St.
Baltimore, Md. 21201

National Technical Information Service
Operations Division
Springfield, Va. 22151

Pan American World Airways
c/o Public Relations
Pan Am Building
New York, N.Y. 10017

Saturday Review
380 Madison Avenue
New York, N.Y. 10017

Society of Automotive Engineers
2 Pennsylvania Plaza
New York, N.Y. 10001

Supt. of Documents
U.S. Government Printing Office
Washington, D. C. 20402

University of Chicago Law Review
1111 East 60th St.
Chicago, Ill. 60637

U.S. News & World Report
2300 N St. N.W.
Washington, D. C. 20037

Vital Speeches of Today
One Wolf's Lane
Pelham, N.Y. 10803

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